

1 INTRODUCTION

1.1 Application

In manual packing lines of the electronics industry, Sales Carton Former CF-12 forms the side-glued blank box to "one end open" box. The box on conveyor is then submitted to the following stage of the process.

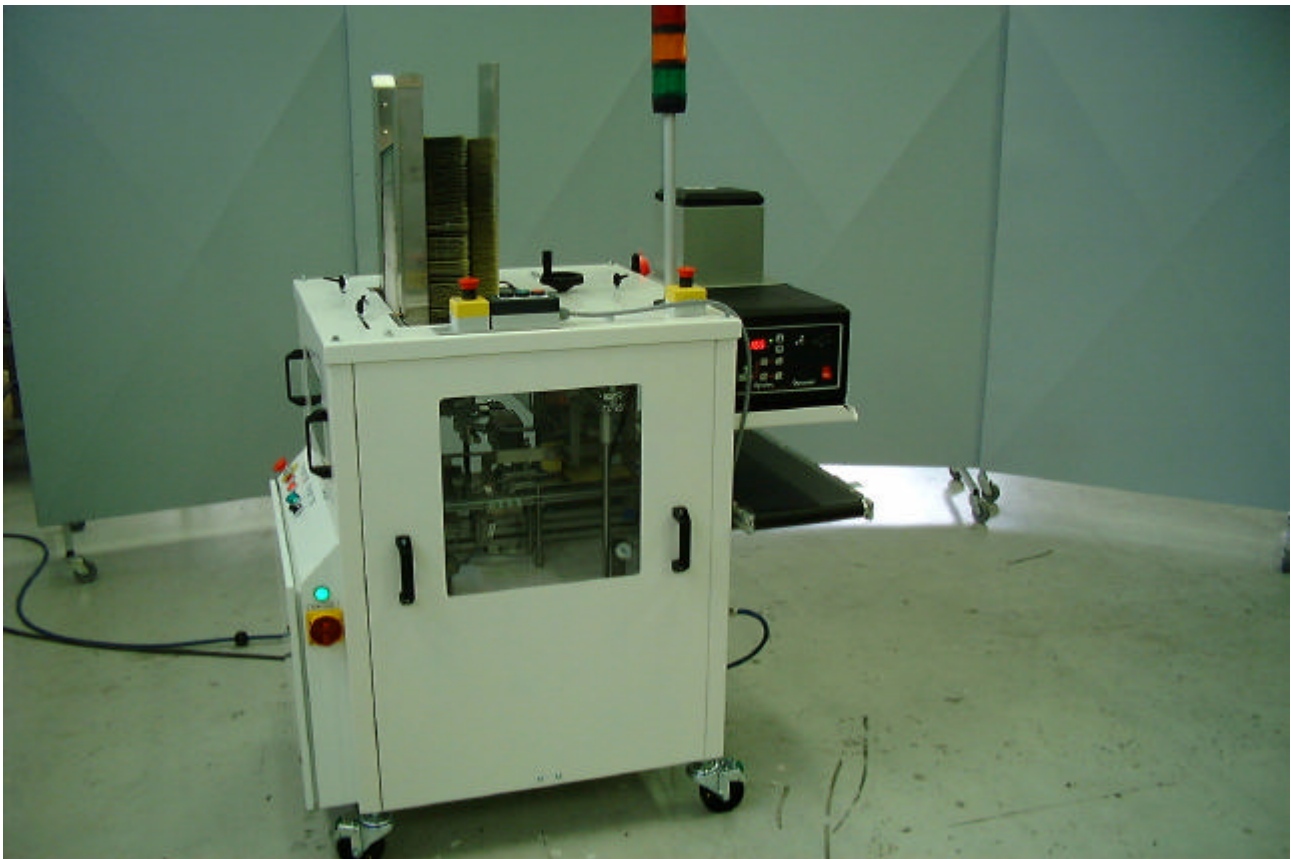
The unit is provided with a control center and SMEMA Electrical Interface.

The Carton former is designed to handle side-glued cardboard boxes only the specification:

FEFCO 0212/E

The Carton former must not be used to handle cardboard sheets meeting not the above mentioned specifications.

Figure 1. View of the Carton Former



1.2 Structure

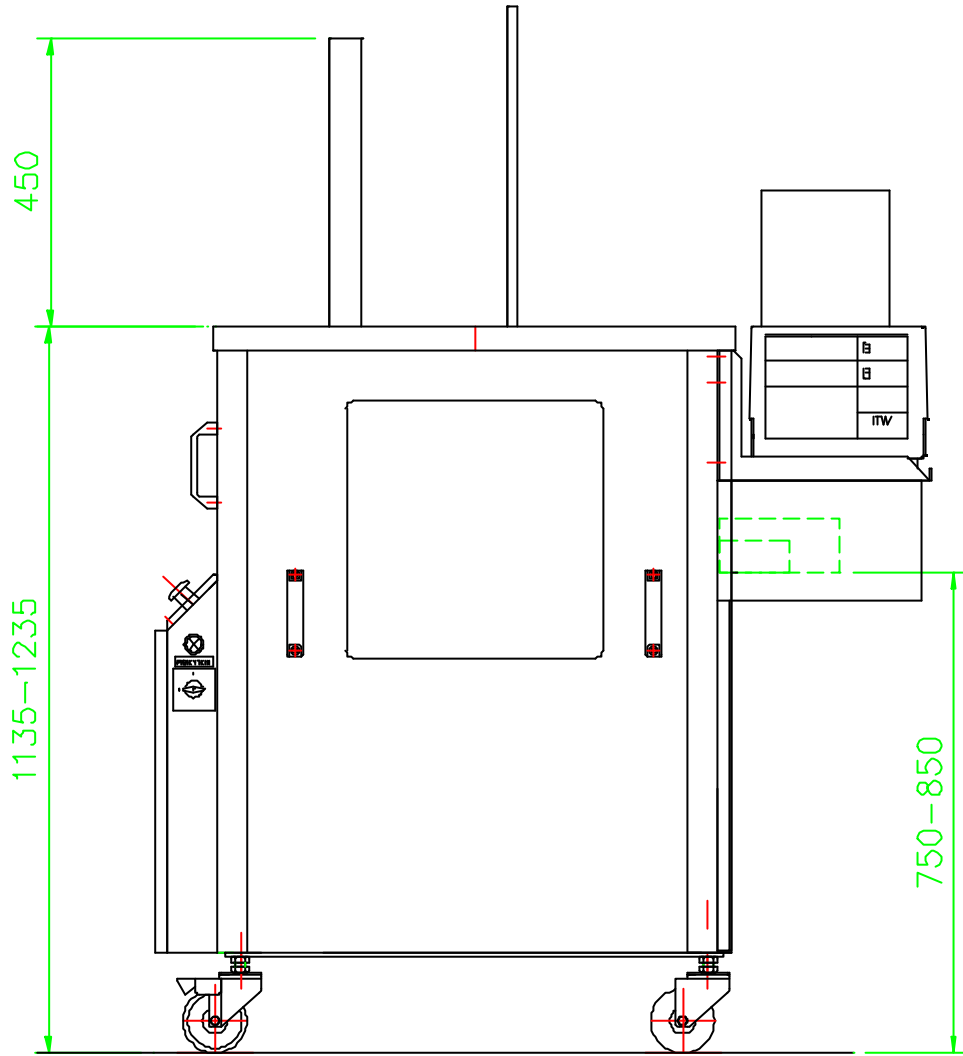


Figure 2. Dimensions of the unit

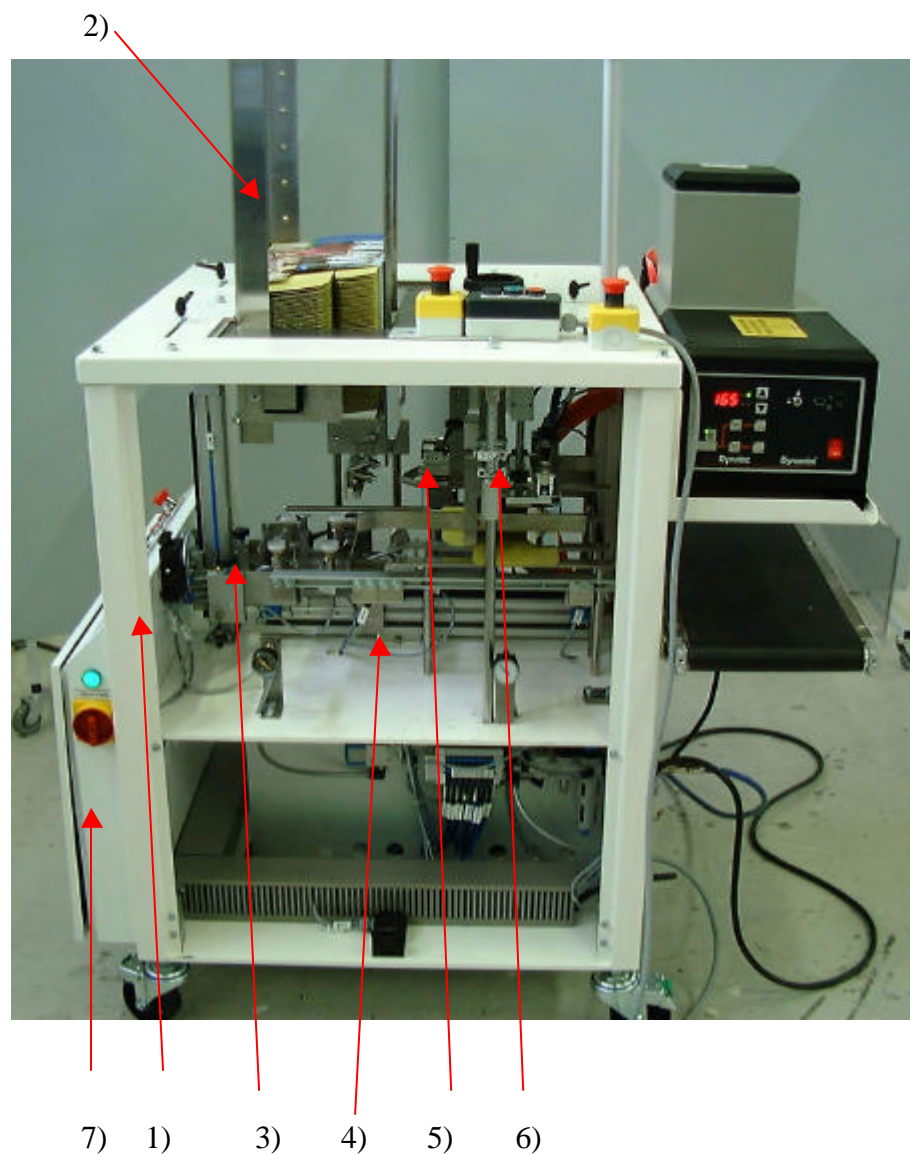
The height of the unit is 1600-1700 mm. The depth is 800 mm and the width is 900 mm.

1.2.1 Mechanics

The cell consists the following subassemblies:

1. Frame
2. Magazine
3. Feeding and forming mechanism
4. Transfer unit
5. Gluing unit
6. Closing and calibrating unit
7. Control center

Figure 3. Mechanics of the unit



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Frame

The frame is constructed to work as a part where all functional parts are connected. It also covers all moving parts of machine. The frame is welded steel construction, which is then painted.

1.2.1.1 Magazine

Magazine for side glued box is on the top of unit. Max. pile of boxes is 600 mm high. The size of magazine is adjustable by means of three control handle.

1.2.1.2 Feeding and forming mechanism

Feeding mechanism works by means of suction cups, which are moved, with pneumatic cylinder. Box opens to rectangle form while feeding and the glue flaps of box are arranged to right order by means of two rotating cylinders.

1.2.1.3 Transfer unit

Pneumatically working transfer unit moves the box from forming station to closing and calibrating station. While transferring the hot melt glue is extruded to the glue flaps of the box. Same system moves ready box from closing station to discharge conveyor.

1.2.1.4 Gluing unit

Gluing unit consist ITW Dynatec Dynamini series melting unit, hose and pneumatically controlled Dyna BF44/1 glue pistol.

1.2.1.5 Closing and calibrating unit

The form of the box is calibrated with transfer unit and pneumatically working calibrator. After calibrating the box is closed by means of pneumatically working closing plate.

1.2.1.6 Control center

All control switches, relays and control logic are collected to same control cabin, which is locating on the back side of the machine.

Pneumatic valves are located to their own connecting plate inside the machine.

Figure 4. Magazine

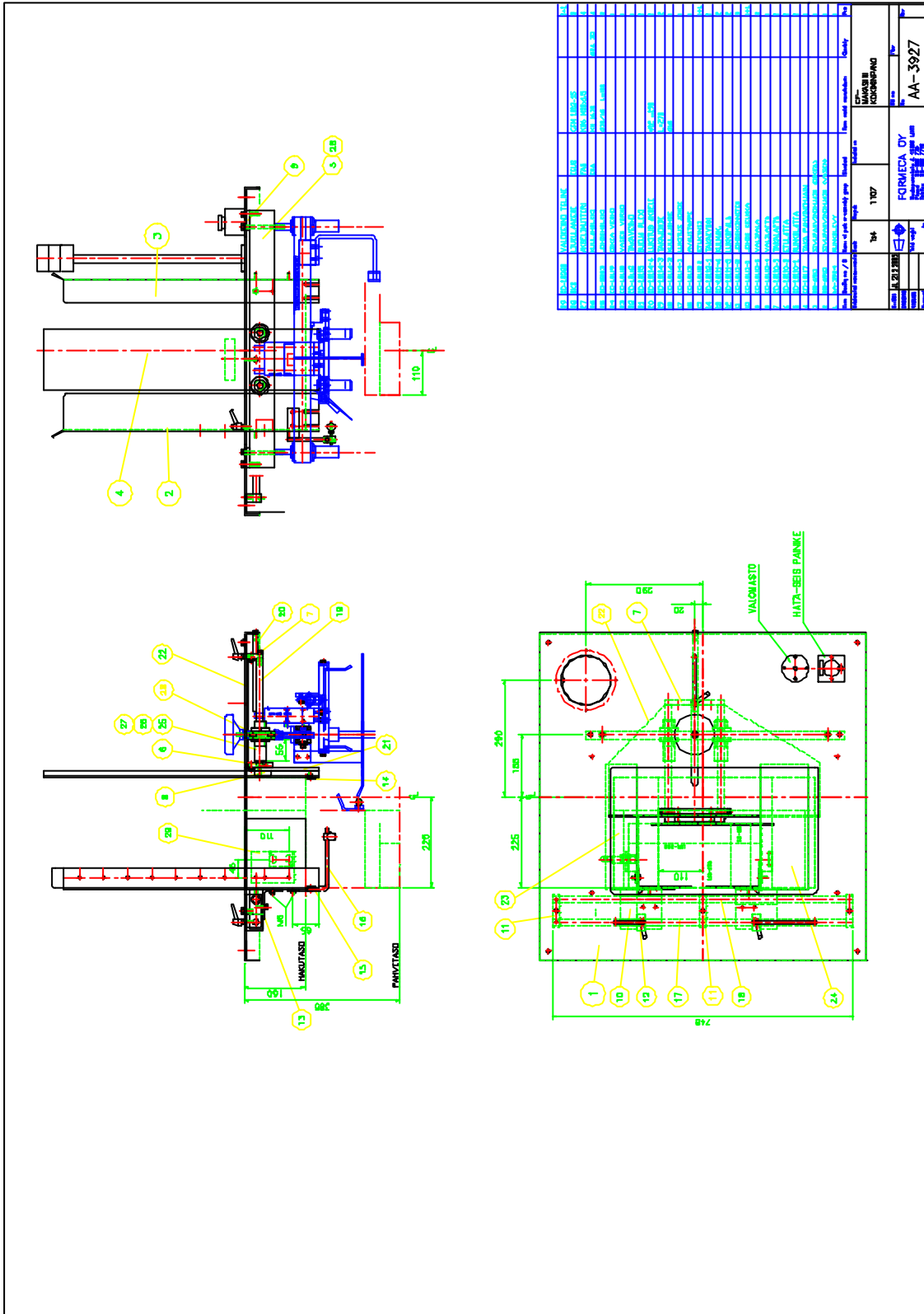
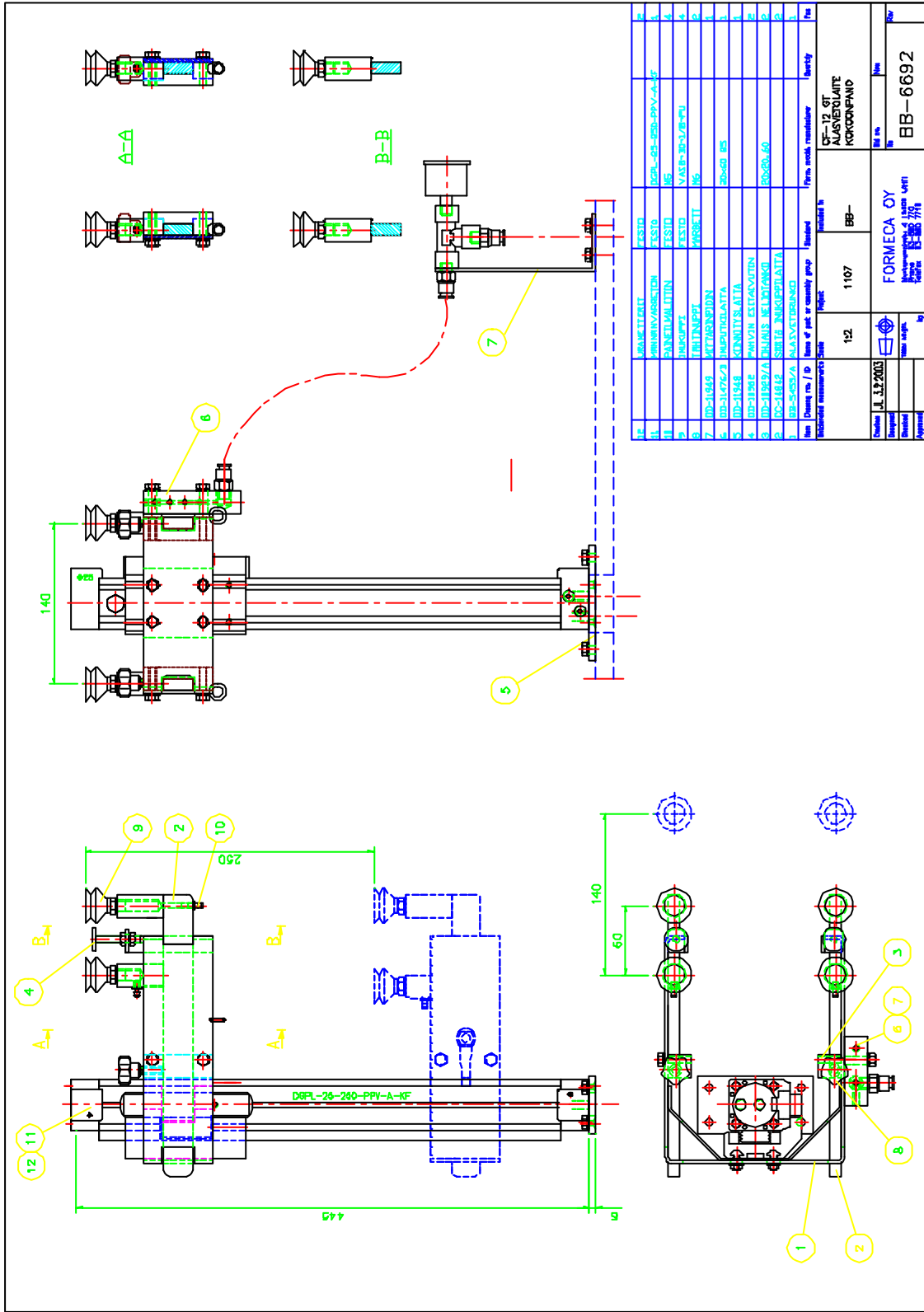


Figure 5. Feeding and forming mechanism



1.2.2 Safety devices

There is one EMERGENCY STOP button in the unit locating on the control center. By pressing the ES button all the unit's transfer movements will stop. The red LED on STOP/RESET button will be lit on the control center.

The safety covers of machine are equipped with safety switch. If the cover is opened every movement will stop. The red LED on SAFETY COVER RESET button will be lit on the control center.

1.2.3 Control system

The unit is controlled by an Omron programmable CPM logic; which controls the handshaking, the movements of all pneumatic cylinders, glue extrusion and discharge conveyor.

1.3 Supply systems

1.3.1 Electrification

The unit is equipped with a plug and mains switch to power supply. The unit is configured for 230/240 VAC/50 Hz or supply voltages. Connect only to a power outlet with grounded contact. The total power consumption is approximately 2,5 kW.

1.3.2 Pneumatics

The system requires compressed air with pressure of 0,5...0,6 MPa. The regulator is adjusted for operating pressure of approximately 0,5 MPa. Air consumption is approximately 200 l/min.

1.4 Technical specifications

Operating voltage	Centered(= common with other units) 230 VAC/50Hz
Total power consumption	approx. 2,5 kW
Air consumption	approx. 200 l/min
Operating pressure for the cylinders	0.5 Mpa
Operating pressure for the vacuum suction cups	0.5 MPa
Supply pressure	0.6 Mpa
Control	Omron programmable CPM logic
Amount of handshaking	1 piece
Required space around the unit during assembly	Back side: 0 mm Front side: 2000 mm Above: 1000 mm

Table 1. Technical specifications